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"COMPREHENSIVE STUDY OF LEON-QUERETARO AREA"

Investigation Number: SR-9631/7

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INTRODUCTION

The results obtained in the edaphological field trip are presented on this occasion.

The field trip was planned with the object in mind of checking edaphological changes derived from the manual interpretation, using the miniaddcol additive color viewer, of the image with central coordinates N20° 18' W100° 51'. The trip lasted ten days, during which 63 sites were visited. A Jet Ranger helicopter was the vehicle used, so that all the chosen points, some inaccesible by terrestial vehicle, were reached.

A rapid analysis of the soil was carried out on each landing and, when found necessary, a pit was excavated in order to describe the soil profile. The principle characteristics annotated were the following: number and types of horizons, their depth, soil reaction to HCl and NaF, its stickiness and plasticity, stone, gravel and sand contents, its structure, porosity and texture, as well as other important characteristics such as the presence of roots, clay skin, fissures, etc.

Once the profile was described, samples were taken for laboratory determination, their salinity, pH, organic matter content, cation

exchange capacity and content of such elements as K, Ca, Mg and P.

During transfer from one site to another, the terrain was observed from the air, this being a great help in locating soil changes and certain terrestial features useful in locality determination. In certain cases, a simple altitudinal descent sufficed to check a contact or some soil characteristic.

RESULTS

In this report only field observations are cited. The information on analysis and the soil associations verified in the field will be covered in the next report.

It was found in the study area that aqueous bodies do not always have an intermediate reflectance in band 5 and a minimun reflectance on band 7 as the majority of remote sensing investigators have considered, since three such aqueous bodies checked in a forest zone appear black in the four bands.

It is also said that low, flat areas which show minimun reflectance in bands 4 and 7 generally correspond to soils with high moisture content. This was verified in areas of dark colored clay soils which suffer seasonal flooding and which retain high moisture contents in the dry season (when they are cultivated).

Nevertheless, other likewise dark colored clay soils show the same low reflectance even when dry (Pelic Vertisols). Another zone wi-

thin the image with the same characteristics turned out to consist of a soil formed of black volcanic ash with high organic matter content and which corresponds, in the FAO-UNESCO 1970 classification, to a Mollic Andosol.

A dam which was notably more reflective in band 5 than in band 4 turned out to posses high contents of a red clay in suspension, an erosion product of nearby soils.

A soil within a closed basin and near a lake, highly reflective in all four bands, turned out to be affected by salinity at the time the image was taken (dry season), the salts being deposited on the surface owing to capillary ascent of water through the soil and evaporation.

Other soils like wise reflective in the four bands but on rolling topography overlie a light colored indurated horizon which, owing to erosion in certain places, lies exposed, this being the probable cause of the high reflectance.

In one area in which cinder cones are present, a soil with Andosol characteristics was identified.

There has been no advance to date in automatic interpretation of LANDSAT information owing to a change in our computation equipment which is not yet ready for use.